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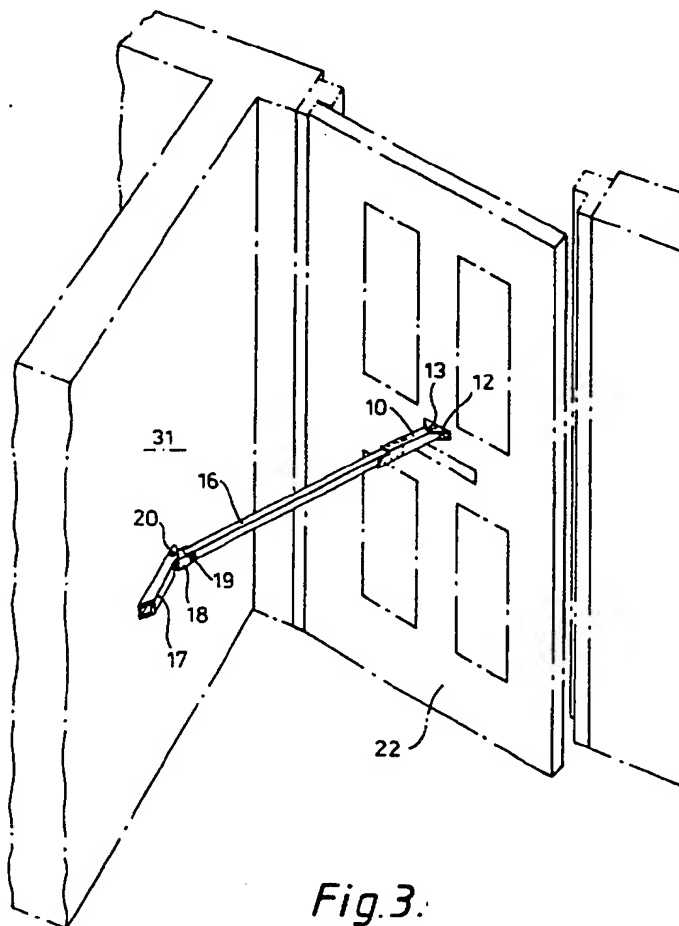
E2F

E1J

Selected US specifications from IPC sub-class E05C

(54) Door security device

(57) A door security device comprises a two-part door stay, the two parts (10,16) being slidably engagable with one another and being relatively movable between an extended position in which the parts are separable from one another and a contracted position in which the parts are interlocked. With one part (10) secured to the door (22) and the other (16) to a fixed structure (31) behind the door, movement of the door (22) from a closed position to a partially open position urges the two parts from their extended position into their interlocked position. Subsequent movement of the door beyond the partially open position is possible only by first returning the door to its closed position and separating the parts from one another.



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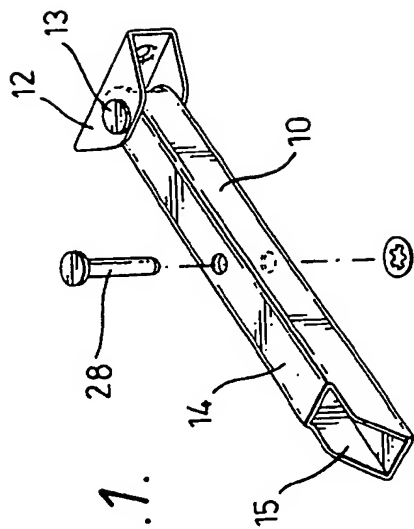


Fig. 1.

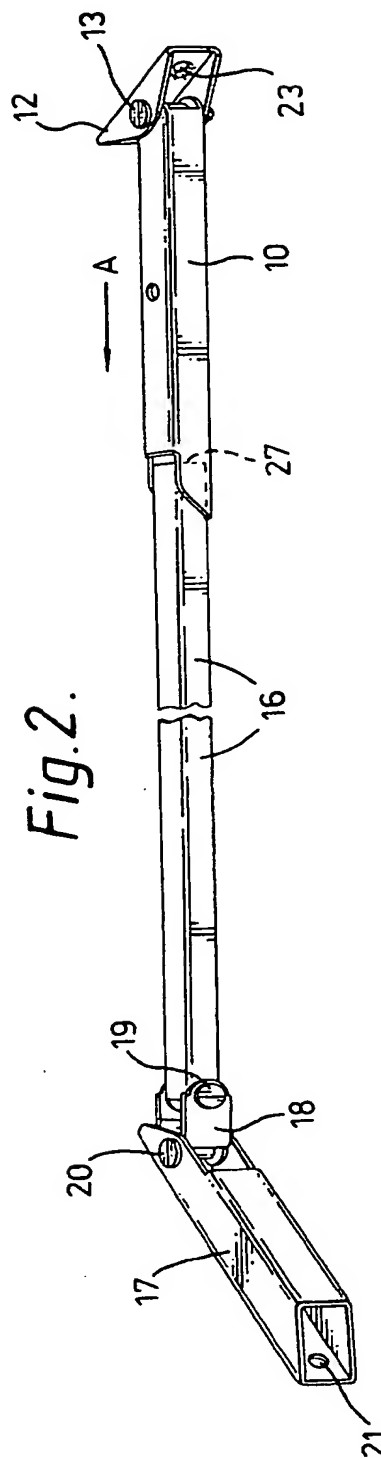


Fig. 2.

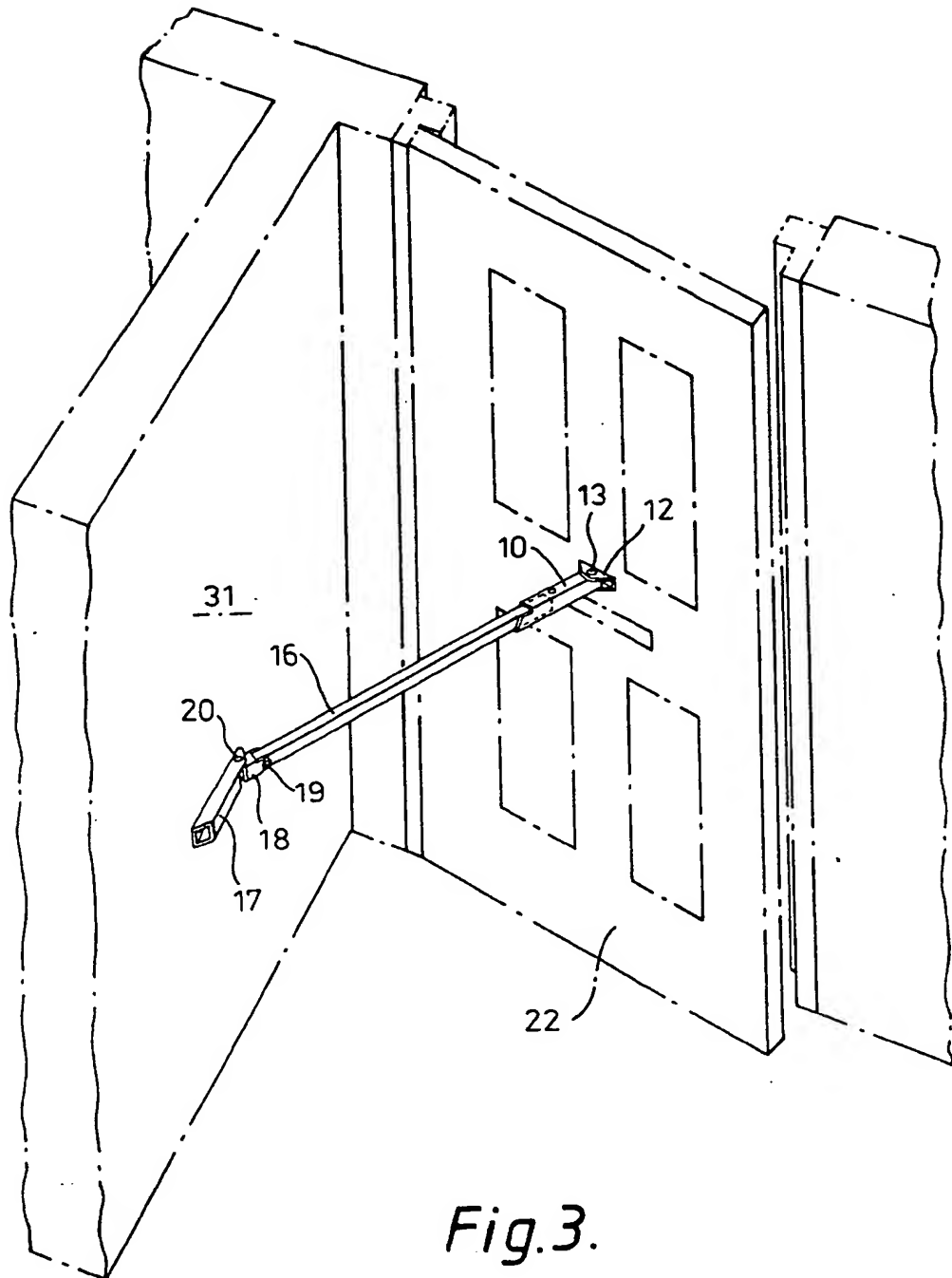


Fig. 3.

SPECIFICATION

Door security devices

5 Door security devices are already known which check or limit the opening movement of a door to prevent unauthorised or forced entry while still permitting a householder to view a caller.

10 One such device consists of a chain which is secured between the door frame and the door, one end of the chain being releasable from its mounting to allow full opening of the door. A disadvantage of this device is that the chain is susceptible to cutting implements inserted through the restricted door opening. Moreover the mounting on the door frame is generally secured by screws and these can be forcibly pulled from the frame merely by a
20 determined intruder putting his shoulder to the door.

According to the present invention an improved door security device comprises a two-part door stay, the two parts being slidably engageable with one another and being relatively moveable between an extended position in which the parts are separable from one another and a contracted position in which the parts are interlocked with one another, the
25 two parts being so adapted that, with one of the parts secured to the rear of a door and the other to a fixed structure behind the door, movement of the door from a closed position to a partially open position urges the two parts from their extended position into their interlocked position, whereby subsequent movement of the door beyond the partially open position is possible only by first returning the door to its closed position and separating the parts from one another.

The two parts preferably form a telescopic structure. For example, one of the parts may comprise a tube and the other part may comprise a rigid member slidable within the tube.
45 One example of a door security device embodying the invention will now be described with reference to the accompanying drawings in which:

Figure 1 is a perspective showing one part of a two-part telescopic door stay;

Figure 2 is a perspective showing the two parts of the stay in an extended or cocked position, and

Figure 3 illustrates diagrammatically one possible installation of the stay within a building.

Referring first to Fig. 1 the socket part of the door stay consists of a hollow square section metal tube 10 which, in use, is mounted on a vertical support surface by means of a bracket 12, the tube being free to pivot about an interconnecting pin 13 in a generally horizontal plane. The top surface 14 of the tube 10 is cut away at one end to provide a short length of open channel 15.
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The other part of the stay can be slidably received in the socket 10 as shown in Fig. 2. It consists of a hollow box section tube 16 interconnected with an associated bracket 17 by a pivoted trunnion mounting 18. The tube 16 is therefore free to pivot about a horizontal pin 19 and about a vertical pin 20. The tube 16 is a telescopic fit in the box section socket 10.

75 The bracket 17 is also a box section tube and is secured to a vertical support surface by fixing screws passing through holes such as the hole 21.

In Fig. 2 the two parts of the stay are shown in an extended or cocked position with the free outermost end 27 of tube 16 supported within the open channel section 15 of the socket tube 10. In this position the two parts can be easily separated simply by lifting the tube 16 out of the channel section 15.

Referring next to Fig. 3, the socket 10 is shown secured to the rear surface of a door 22 by fixing screws which pass through holes, such as the hole 23 (Fig. 2), in the mounting bracket 12.

The other part of the stay is secured by brackets 17 to a wall 31 extending rearwardly from a position adjacent the hinged side of the door 22. With the door closed, the two parts of the door stay can be aligned with one another and placed in their extended or cocked position as shown in Fig. 2. As the door 22 moves to the partially open position shown in Fig. 3, the socket 10 is urged in the direction of arrow A (Fig. 2) to a position in which the outermost end 27 of the tube 16 is located within the closed portion of tube 10. In this contracted or interlocked position, the two parts of the stay cannot be separated without first returning the door to its closed position.

Further opening movement of the door is blocked when the outermost end 27 of the tube 16 abuts a stop pin 28 (Fig. 1) inserted about half-way down the tube 10 and retained by spring clips. Further aligned holes can be provided if necessary along the length of the tube 10 to permit adjustment of the position of the end stop pin. Moreover the stay is inaccessible from outside the door, and the major force acting on the stay is a compressive thrust which applies essentially a shear force to the mounting bracket 17. Accordingly the component of force acting to pull the fixing screws out of the wall 31 is negligible, and this ensures that the stay remains secured even though substantial shoulder pressure may be applied to the door.

In one possible alternative arrangement, the mounting bracket 17 for the stay 16 is secured to a wall extending rearwardly from the opposite (non-hinged) side of the door. In this case the socket tube 10 would generally be fixed to an upright frame member of the door adjacent the wall, and the pivot pin 13 (Fig. 1)
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would act as the end stop to accommodate greater travel of the stay 16 within the socket tube 10 for a given door opening.

In either case the socket tube 10 when not in use is swung back about pivot pin 13 and stowed against the door using, for example, a magnetic catch. Similarly the tube 16 is swung about pivot pin 18 and hangs down freely against the wall when not in use.

10 The two-part stay provides increased security against unwelcome callers and would be of particular benefit in homes occupied by elderly people. The device makes it virtually impossible to gain access through the door without first returning the door to its closed position and separating the tube 16 from the socket tube 10.

In one alternative embodiment (not illustrated) the stay 16 and mounting bracket 17 are replaced by a keyhole slot or groove fixed to the wall and adapted to slidably receive a knob or similar protuberance at the end of a rigid elongate stay member secured to the door, the knob or protuberance being removable from the enlarged portion of the keyhole slot or groove only when the two parts of the stay are in an extended or cocked position with the door closed.

30 CLAIMS

1. A door security device comprising a two-part door stay, the two parts being slidably engageable with one another and being relatively movable between an extended position in which the parts are separable from one another and a contracted position in which the parts are interlocked with one another, the two parts being so adapted that, with one of the parts secured to the rear of a door and the other to a fixed structure behind the door, movement of the door from a closed position to a partially open position urges the two parts from their extended position into their interlocked position, whereby subsequent movement of the door beyond the partially open position is possible only by first returning the door to its closed position and separating the parts from one another.

2. A device according to claim 1 in which the two parts are a telescopic fit and at least one of the said parts comprises a box section member.

3. A device according to claim 2 in which a first of the said parts comprises a box section member having a free end partially cut away to provide a short length of open channel, the open channel supporting a free end of the second part when the parts are in their extended position, and the free end of the second part being retained within the box section of the first part when the parts are in their contracted position.

4. A device according to claim 3 in which the box section member is pivotally connected to a mounting bracket for rotation about a

substantially vertical axis.

5. A device according to claim 3 or claim 4 further comprising an end stop for limiting the penetration of the free end of the second part into the box section member.

6. A device according to claim 5 in which the position of the end stop is adjustable.

7. A device according to claim 3 in which the second part comprises a rigid elongate member secured to a mounting bracket by means permitting pivotal movement of the elongate member about substantially horizontal and vertical axes.

8. A device according to claim 7 in which the securing means includes a pivoted trunnion mounting.

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